ABSTRACT

Disclosed are multi-element lenses which demonstrate reduced achromatic focal length and reduced electromagentic beam spot size dispersal effects in ellipsometer and polarimeter systems. Also disclosed is methodology for evaluating parameters in parameterized equations which enables calculating retardance entered to, or between, orthogonal components in a beam of electromagnetic radiation which is caused to pass through input and/or output optical elements and interact with a material system, by each of the input and output optical elements, substantially uncorrelated with retardation entered by the material system. Present invention input and/or output focusing lens(es) find application in spectroscopic ellipsometer mediated investigation of small spots on material systems, wherein a beam of electromagnetic radiation is caused to converge via an input lens, interact with a very small, chromatically undispersed spot area on a material system, then optionally re-collimate via an output lens, prior to entering a detector system. Present invention methodology provides benefit where it is necessary to separate out birefringent effects of input and/or output optical element focusing lens(es), optionally in combination with beam directing and/or window elements present in an ellipsometer system which are positioned with respect to input and/or output len(es) so as to be ellipsometrically indistinguishable therefrom, to arrive at material system characterizing ellipsometric PSI and DELTA results.